

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
Amendment of parts 0, 1, 2, 15, and 18 of the)	ET Docket No. 15-170
Commission's Rules regarding Authorization of)	
Radiofrequency Equipment)	

COMMENTS of MATTHEW KAUFMAN

To the Commission:

The rule-making as proposed does not address the legitimate modification of wireless devices by licensed amateur radio operators or the realities of the lifecycle of consumer electronics.

I am a licensed radio amateur (FCC callsign: KA6SQG) and I operate a network of amateur-band repeater stations in the San Francisco and Monterey Bay areas. These repeaters are engineered for and have been used in the support of public safety, whether that be planned events such as the Sea Otter Classic bike race or the Santa Cruz Triathlon, or unplanned emergencies such as the Lockheed Fire, or a future major earthquake in this area. This system incorporates novel advances in the state of the art of radio communications, namely receiver voting and transmitter simulcast for an extremely wide coverage area, implemented using voice over IP (VoIP). The use of the system for emergency communications is fully supported by Part 97.1(a) ("...particularly with respect to providing emergency communication), but more important these advances in the state of the art are precisely what is envisioned in the Basis and Purpose of the Amateur Radio Service as set out in Part 97.1(b) ("Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art")

However, this system would not exist and be available to provide these services without simultaneously the ability to engineer and implement long-range microwave links within the Amateur Radio bands at 3400 and 5900 MHz. Myself and others engaged in this project have been able to do that because existing consumer wireless devices implementing the 802.11 standards can be modified at low cost by replacing the existing software within these wireless devices with code that implements changes, including retuning the devices to the Amateur Radio band segments. We are then able to take advantage of the low unit cost of mass-market wireless devices, which when combined with our software technical skills is able to yield a microwave network sufficient for our needs and within our limited budget. That most of the functionality of these devices is implemented in software, any changes to regulation which encourage or require

device manufacturers to prohibit modification at the software level will block the ability for licensed radio amateurs to make these modifications which are and should be permitted under Part 97.

In addition, I have significant experience with the continued use of older consumer electronics and computing devices both by myself and by parties who are unable to afford the “latest and greatest” equipment, including organizations in the third world. Most of these devices are built to be thrown away within just a few years and so any bugs that may be present, or functional limitations that may arise (for example, support of IPv6 now that IPv4 addresses are no longer available) are not routinely addressed by the manufacturer. The only way this equipment can continue to be of value to either lower-income consumers who are not able to follow the replacement schedule encouraged by the manufacturers or to parties purchasing or receiving donations of this equipment secondhand is for replacement software to be available from third parties and installable by the end user. An example of firmware which has “breathed new life” into secondhand wireless devices is the open-source OpenWRT project. Not only does this add functionality such as IPv6 support, it and other projects have made possible such things as mesh networking in otherwise unconnected communities. If regulations were to change such that manufacturers were encouraged or required to block the installation of third-party firmware, these devices would no longer be available at low cost to the technically-underserved population of America and the rest of the world.

In summary, I am opposed to any change to regulation which would prevent third-party software or firmware from being installed on a wireless device, including such third-party software that can change the fundamental operation of the wireless hardware because I believe that the net loss to the amateur radio community and to the individuals and groups who rely on secondhand equipment in order to be connected to the Internet vastly outweighs any benefits that might be provided by such regulation.